65-23 Elipar FreeLight™ (Project 01-75) (9/00)

The Elipar™ FreeLight is a light unit that uses focused Light-Emitting Diode (LED) technology to polymerize visible-light-activated materials. Compared to standard halogen bulbs, LED units use semiconductors, usually gallium nitride, to produce a more narrow spectral range that is closer to the absorption spectrum of the camphorquinone (450 to 490 nm) that initiates resin polymerization. Due to the combination of this more specific spectral range and the LED's superior energy conversion rate when compared to halogen lamps, the Elipar™ FreeLight is purported to generate sufficient intensity for polymerization using rechargeable Nickel-Metal-Hydride batteries rather than line voltage. Because it does not have a bulky power unit and cords, 3M ESPE claims that the light is portable, lightweight, and very convenient to use. A new, fully-charged battery is reported to typically provide 45 minutes of exposure time and requires two hours to recharge when completely discharged. The timer controls and on/off control are located on the handpiece. Four curing times can be selected (10, 20, 30, or 40 seconds) and audible beeps alert the user to the length of exposure (i.e., one beep at 10 seconds, 2 beeps at 20 seconds, etc.) The Elipar™ FreeLight is shipped with an 8-mm-diameter, autoclavable, Turbo light guide. Other light guides that are separately available include the "maxi fiber rod," a 13-mm-diameter light guide, and the "proxi fiber rod" which has a point-shaped tip for interproximal areas. An intensity tester is built-in to the charging stand and indicates the relative intensity of the light's output (i.e., 20%, 40%, 60%, 80%, or 100%). The Elipar™ FreeLight handpiece is 11.2 inches long X 1.2 inches in diameter and weighs 11.3 ounces. The charging unit is available in 120V and 220V models.

Manufacturer:
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Suggested Retail Price:
$999.99 Elipar™ FreeLight, includes:
-handpiece
-autoclavable 8-mm-diameter Turbo light guide
-battery charger stand with built-in intensity tester
-instruction manual

Government Price:
$600.00 Includes: same as above.

ADVANTAGES:
+ Offers the conveniences of portability and light weight.
+ Adequately polymerizes hybrid resin composite in 30 seconds.
+ Maintains constant irradiance as its batteries discharge.
+ Generates very little heat from tip during use.
+ Curing tip swivels 360 degrees to facilitate intraoral access.
+ Curing tips are autoclavable.
+ Very quiet.
+ Requires little counter space for storage.

DISADVANTAGES:
- Does not adequately cure microfill resin composites using the composite manufacturer's recommended exposure times.
- Required more time than the control halogen light unit to adequately polymerize resin composites.
- More expensive than most halogen curing lights.
- No blue-light eye protective devices were provided.
- Unit became warm with repeated use.
- Some evaluators disliked the balance and length of the handpiece.
- Easy to accidentally knock handpiece from charging base.

SUMMARY AND CONCLUSIONS:
The Elipar™ FreeLight is a lightweight, portable curing light that uses the latest Light-Emitting Diode (LED) technology. Clinical evaluators appreciated its portability and convenience, however the length and balance of the handpiece were less than ideal. The positioning of the timer controls and activation button was appropriate but still less ergonomic than that seen with gun-style curing lights. DIS testing found that the Elipar™ FreeLight adequately polymerized the hybrid resin composite but not the microfill used in the evaluation (in the amount of time recommended by the resin composites' manufacturer). However, previous DIS testing has found that most halogen lights also inadequately polymerize microfill resin composites using the same exposure time. Only high-intensity halogen lights (i.e., >1000 mW/cm2) can predictably polymerize microfills in 40 seconds or less. When using an average-intensity halogen light (i.e., 300 to 600 mW/cm2), 40 seconds are required for a hybrid resin composite and 60 seconds for a microfill resin composite to adequately cure a 2-mm-thick increment. DIS testing found that the Elipar™ FreeLight required 30 seconds and 56 seconds to polymerize the same materials. The **Elipar™ FreeLight** is rated **Acceptable** for use by the federal dental services.